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(54) SURF BOARD

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(57) Claim

1. A surfboard or the like of the kind having fin means thereon, characterised in that the said surfboard or the like is provided, towards the tail end thereof, with two depending fins disposed in tandem upon the centre-line of said surfboard or the like.



FORM 10

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952-69 81

# COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE:

Class

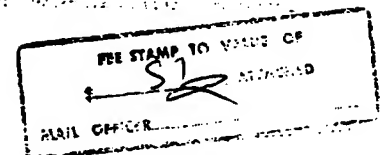
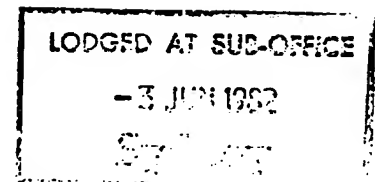
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Complete Specification for the Invention entitled: "IMPROVEMENTS IN SURFBOARDS"

The following statement is a full description of this invention, including the best method of performing it known to me/us:—

This invention relates to surfboards and the like, of the kind having a stabilising fin or fins.

The sport of riding a board on the crest of a wave as it approaches the shore is old; the commander of "Endeavour", Captain Cook, records having seen this feat performed in the "Sandwich Isles".

In the course of time, knowledge of this exciting and skilful sport spread from Hawaii to California and came to fruition in what is termed the "Malibu" surfboard. This was a curvilinear wooden board, from 12 to 20 feet in  
10 length, used to ride the crest of a wave in to the shore, the board having first been paddled seaward by hand in order to "catch" a good wave.

As the popularity of the sport grew, two shortcomings of the "Malibu" board became increasingly obvious; the first of these was the sheer physical size and weight of such a solid wooden board, and the second was that it was virtually uncontrollable, that is to say, the rider could only catch a wave as it began to show signs of breaking, and ride that wave into shore - the board and  
20 its rider having little or no directional control over what was to happen.

More modern surfboards began to be made from fibreglass or foam-filled fibreglass shells. These were short enough and light enough to be carried easily but the problem of directional control, or steering, still remained.

It was then realised that the provision of a

"ventral" fin mounted adjacent the tail end of a surfboard allowed the board to be positively steered and this, for the first time, allowed a rider to deliberately turn his board and ride it across the direction in which the wave is travelling, and even to ride it "up the wave" to thereby obtain a longer and more satisfying ride on each wave.

However, with such a single fin, even moderately difficult conditions are enough to cause the "spin-out" which is so frustrating and even dangerous to the rider; 10 this phenomenon appears to be caused by insufficient lateral adhesion between fin and water, and so attempts were made to counteract it by increasing the depth and lateral area of the base of the fin. The result was excessive drag and loss of manoeuvrability owing to the keel effect of the enlarged fin, which led to even poorer performance.

Variations of the finned board have been tried out, for example laterally-spaced paired fins - the so-called "twin-fin" board. This attempt produced a surfboard which was slightly more manoeuvrable and capable of "tighter" 20 turns under ideal surfing conditions, but which tended to spin-out in big waves. It should here be noted that what in a conventional marine hull is called the chine is, in surfing parlance, termed the "rail". When a turn is made on a surfboard it is canted sideways, and this action, with the keel effect of the fin keying in to the moving water, allows the turn to be made. A board having laterally paired

fins will, when canted hard enough onto its rail, permit a quite tight turn, but is physically more difficult to cant over because the water funnels between the two fins and tends to keep the board in the water, making turning difficult.

Laterally-spaced triple fins have some advantages over and above paired fins inasmuch that such a board requires somewhat less "rail" to make a turn, but suffers from the fact that the two outer fins tend to over-react  
10 to such an extent that fine control may be compromised; for example, adhesion between fins and water is so great that side-to-side leaning, or "railing", becomes physically very hard to accomplish.

As a modification of the triple fin format, an arrangement involving a full-size centre-line fin flanked by two smaller, offset fins has been tried out but with limited success; no advantages are gained and none of the disadvantages obviated.

It is therefore an object of the present invention  
20 to overcome the above-mentioned and other disadvantages of prior known surfboards and the like, and it has now been found, quite surprisingly, that the manoeuvrability and holding capabilities of a surfboard or the like can be greatly increased by providing them with an arrangement of fins quite different from those arrangements to be found on prior known surfboards.

To this end, the present invention provides a surfboard or the like of the kind having fin means thereon, characterised in that the said surfboard or the like is provided, towards the tail end thereof, with two depending fins disposed in tandem upon the centre-line of the surfboard or the like.

Preferably, the leading one of these fins has a surface area greater than that of the trailing one, and thus there will be a reduction both in drag and keel effect  
10 while lateral manoeuvrability will be enhanced.

In order that the reader may gain a better understanding of the present invention, hereinafter is described a preferred embodiment of it, by way of example only, and with reference to the accompanying drawings in which:-

Figures 1 to 4 illustrate some typical fin arrangements to be found on prior known surfboards;

Figure 5 is a bottom plan view of a surfboard according to the present invention; and

Figure 6 is a corresponding side elevation.

20 Referring firstly to the drawings of prior known surfboards, Figure 1 illustrates the tail end of a first such surfboard; the tail end is of 'pin tail' design and has a single, curvilinear ventral fin 1.

Figure 2 shows the tail end of a second such surfboard known as a "twin-fin" board; this surfboard has a transom or stright tail end design and is provided with

a pair of laterally-spaced fins 2 and 3.

Figure 3 illustrates the tail end of a surfboard of "swallow tail" design which has three laterally-spaced fins 4, 5 and 6, while in Figure 4 is shown the tail end of a fourth prior known surfboard. This latter surfboard is of the so-called "swallow tuck-in" tail design and again bears three laterally-spaced fins. The centre one of these three fins is a full-size centre-line fin 7 flanked by two smaller offset fins 8 and 9.

10               Turning now to Figures 5 and 6, a surfboard or the like according to the present invention, generally referenced 10, has a body 11 which is depicted as having a trailing end 12 of "pin tail" design; however, it will be realised that the outline of the board forms no part of the invention. Towards the tail end of surfboard 10 there are provided two depending, ventral fins 13 and 14 disposed in tandem upon the centre-line 15 of body 11. As is to be seen in Figures 5 and 6, the leading fin 14 has a surface area greater than that of the trailing fin 13 but it is equally contemplated  
20   that the leading fin might well have a surface area lesser than that of the trailing fin or that their surface areas could be the same. Nevertheless, the arrangement shown is preferred.

A further advantage conferred by the tandem fin arrangement shown in Figures 5 and 6 is that a surfboard so fitted can be made with increased 'tail-lift'. Such tail-lift

is indicated in Figure 6 by the letter 'd'.

Early surfboards were made with a generally linear bottom contour but with the front end slightly upswept - the so-called 'nose-lift' of the board. This design proved to be not wholly satisfactory and subsequently boards have been made with a full sheer, giving so-called 'tail-lift' to the board, and providing superior turning qualities and less keel effect. However, while pronounced tail-lift is desirable for the above reasons it has some drawbacks on a  
10 single-fin board, or on boards having laterally-spaced twin-fin and triple-fin arrangements, in that control is progressively lost as the rider moves his stance towards the middle of the board, the tail end being lifted from the water and the adhesion of the fin to the water lessened. The present invention effectively reduces this undesirable tendency, and the combination of tandem fins and pronounced tail lift allows very tight turns to be performed, such as those which are termed "rocking-chair turns" in which a skilled rider can ride up a wave in a direction almost  
20 opposite to that from which the turn was commenced. That is to say, the combination permits "dropping and climbing" cycles of less amplitude than with prior known surfboards.

From the above, it will be realised that the tandem fin surfboard according to the present invention offers some distinct advantages over prior known boards and in this regard it might be considered that while a surfboard of good



quality will, at 1981 prices, cost in the order of, say, \$A340, the cost of a fin is only about \$A20 irrespective of size.

Therefore, the present invention will be also seen to consist in a method of improving the manoeuvrability and holding capabilities of a surfboard or the like, comprising providing upon the centre line of a surfboard or the like, towards the tail end thereof, at least one depending fin; the arrangement being such that the resulting surfboard  
10 or the like has two depending fins disposed in tandem upon the centre-line thereof.

Thus, the owner of an existing surfboard may, for a quite modest outlay, convert his or her board to the desirable tandem-finned configuration.

Since, in most latter-day surfboards, fins are not merely bonded to the underside but their bases are accommodated in what are termed 'fin-boxes' let into the underside, the addition of a fin may require the installation of a second fin-box in the board or, at least, the extension of an  
20 existing one, both modifications being able to be carried out by a surfboard maker or even by the owner of the board, at minimum expense.

In Figures 5 and 6, these dual fin-boxes - or extended existing fin-box - shown in broken line - are referenced 16, 17.

Although this specification is generally couched

in terms of surfboards, tandem-fin arrangements may equally well be provided on such devices as windsurfers, surf skis, solid catamaran hulls and the like, whenever and wherever desired.

From the abovegoing it will be readily appreciated that surfboards or the like constructed according to the present invention provide the public with a new or much-improved sporting article or, at the very least, offer to it a useful and undeniably attractive choice.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A surfboard or the like of the kind having fin means thereon, characterised in that the said surfboard or the like is provided, towards the tail end thereof, with two depending fins disposed in tandem upon the centre-line of said surfboard or the like.
2. A surfboard or the like as claimed in Claim 1, wherein the leading one of said fins has a surface area greater than that of the trailing one of said fins.
3. A surfboard or the like as claimed in Claim 1 or Claim 2, wherein the bases of said two depending fins are each accommodated in a discrete fin-box of said surfboard or the like.
4. A surfboard or the like as claimed in Claim 1 or Claim 2, wherein the bases of said two depending fins are accommodated in an extended existing fin-box of said surfboard or the like.
5. A method of improving the manoeuvrability and holding capabilities of a surfboard or the like, comprising providing upon the centre line of a surfboard or the like, towards the tail end thereof, at least one depending fin; the arrangement being such that the resulting surfboard or the like has two depending fins disposed in tandem upon the centre-line thereof.
6. The method as claimed in Claim 5, wherein there

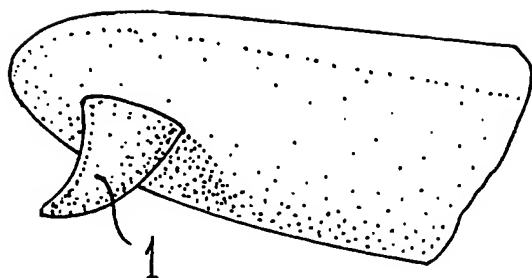
is provided a leading fin which has a surface area greater than that of a trailing fin.

7. A surfboard or the like of the kind having fin means thereon, substantially as hereinbefore described with reference to Figures 5 and 6 of the accompanying drawings.

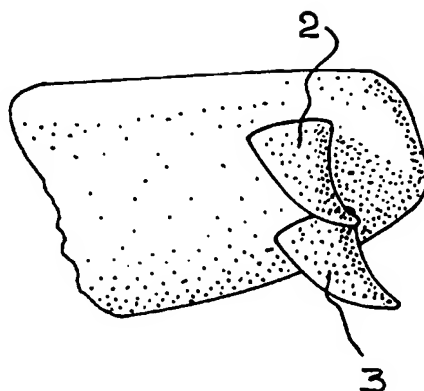
DATED this 15th day of October, 1981.

VICTOR CHRISTIAN FORD

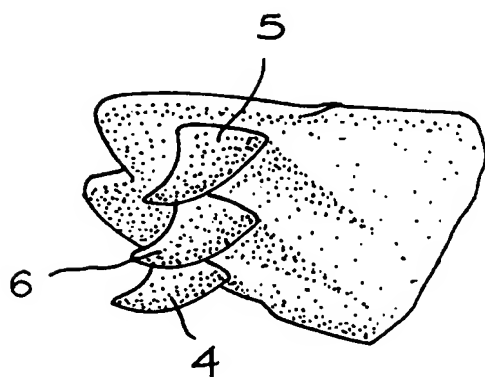
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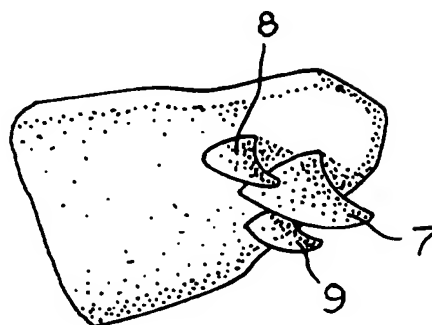
~Fig. 1~



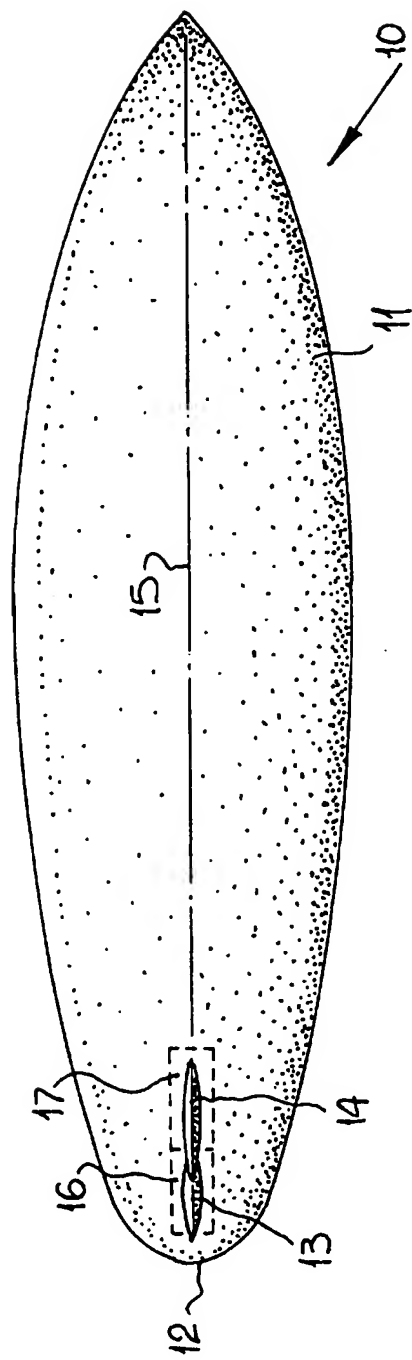
~Fig. 2~



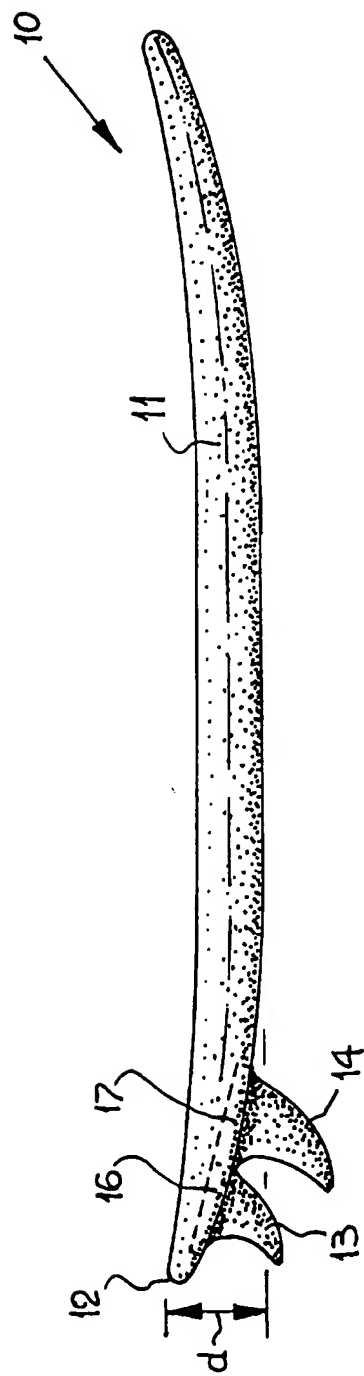
~Fig. 3~



~Fig. 4~



~Fig. 5~



~Fig. 6~